ENVIRONMENTAL ASSESSMENT

MISSISSIPPI RIVER and TRIBUTARIES
MORGANZA, LOUISIANA TO THE GULF OF MEXICO
HURRICANE PROTECTION LEVEE, REACH J, SEGMENT 1
TERREBONNE PARISH, LOUISIANA

EA #406

INTRODUCTION

The U.S. Army Corps of Engineers (USACE) - Mississippi Valley Division, New Orleans District (CEMVN), has prepared this Environmental Assessment #406 (EA #406) to evaluate the potential impacts associated with the proposed construction of a hurricane levee located in Terrebonne Parish, southeast of Houma (see figure 1) that connects with the existing Terrebonne Levee Conservation District's 4-1 and 4-3B levees.

EA #406 has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation, ER 200-2-2.

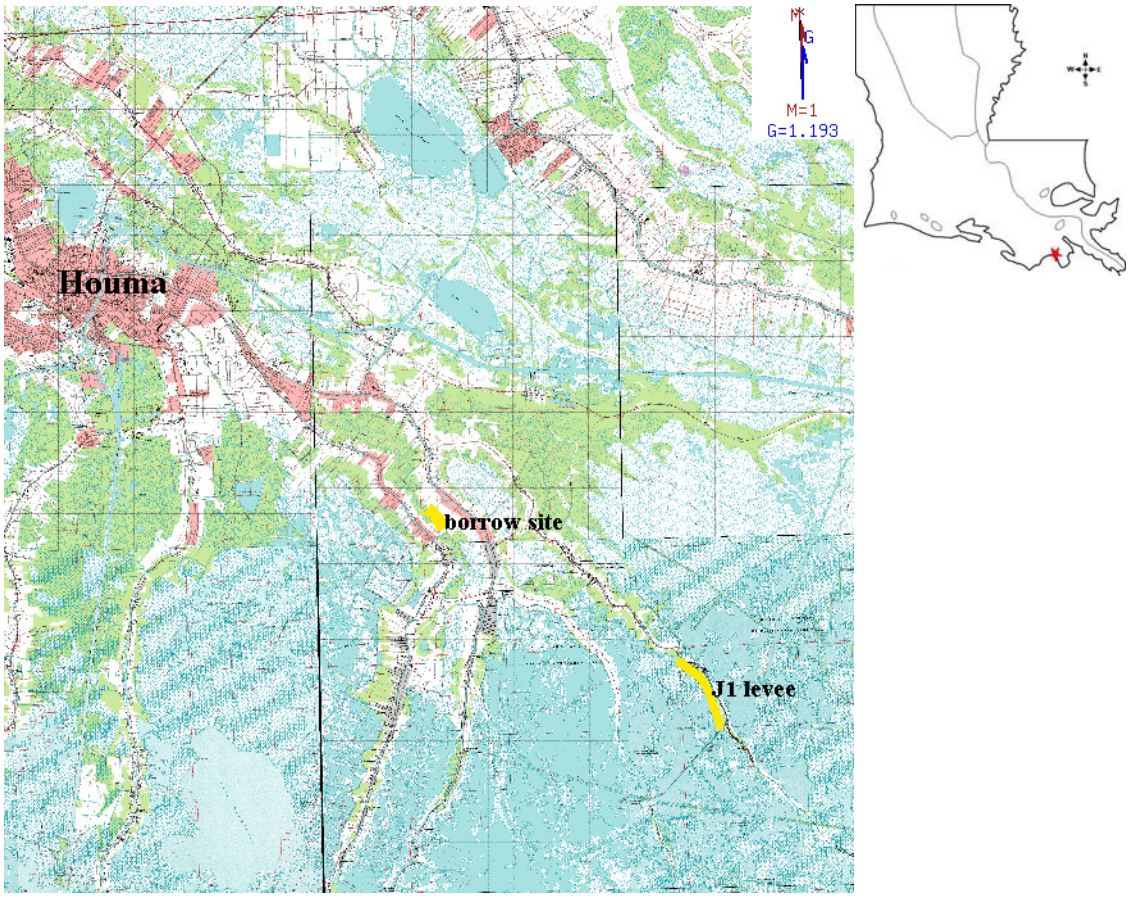

Figure 1. Reach J1 levee and borrow site locations, Terrebonne Parish, Louisiana.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the Reach J1 Levee of the Morganza to the Gulf of Mexico (MtoG) comprehensive hurricane flood protection project would be to provide hurricane protection for area residents from storm surges originating from of Terrebonne and Timbalier Bays, Gulf of Mexico. The Reach J1 levee would also ensure the integrity of LA Highway 665, a crucial evacuation route. The proposed action resulted from area resident's desire for protection against tidal flooding and saltwater intrusion that is associated with abnormal storm events and hurricanes. A secondary objective of this levee reach and the greater MtoG project is the reduction of coastal wetlands loss and preservation of the fragile ecosystem from damaging tidal surges resulting from tropical storms and hurricanes.

AUTHORITY FOR THE PROPOSED ACTION

The reconnaissance study was authorized by a resolution adopted April 30, 1992, by the Committee of Public Works and Transportation of the U.S. House of Representatives. The Energy and Water Development Appropriation Act of 1995 (PL 103-316) authorized the Morganza, Louisiana to the Gulf of Mexico feasibility study. It directed the USACE to give particular attention to the interrelationships of the various ongoing studies in the area, and consider improvements for the Houma Navigation Canal (HNC). The Water Resources Development Act (WRDA) of 1996 authorized the USACE to conduct an independent study of a lock to be located in the HNC. That study was completed in 1997. In 1998, Congress authorized the USACE to initiate detailed design of the multipurpose lock in the HNC.

The Energy and Water Development FY 2004 Appropriations Bill, PL108-137; Section 158 of the House Report (HR108-2754) states that "The Secretary may carry out the Reach J, Segment 1, element of the project for hurricane and storm damage reduction, Morganza to the Gulf of Mexico, Louisiana, in accordance with the report of the Chief of Engineers, dated August 23, 2002, and supplemental report dated July 22, 2003, at a total cost of $4,000,000." This partial authorization allows initiation of construction on a reach of levee identified as work-in-kind. The levee will link a gap between existing Terrebonne Levee Conservation District levees, but will become a part of the overall Morganza, Louisiana to the Gulf of Mexico Hurricane Protection Project should said project be authorized. CEMVN will coordinate closely with the future non-Federal sponsors to ensure that work they complete is integral to the overall project. Credits toward their share of the total project cost are subject to Congressional authorization of the project in its entirety and execution of a Project Cooperation Agreement. Work consists of completing on-going preconstruction engineering and design concurrent with NEPA compliance documents; preparation of plans and specifications; advertisement, award, and construction of the Reach J, Segment 1, levee (Reach J1 Levee) element of the MtoG, Louisiana, Hurricane Protection Project.

PRIOR REPORTS

The Final Programmatic Environmental Impact Statement Mississippi River and Tributaries-Morganza, Louisiana to the Gulf of Mexico Hurricane Protection dated March 2002 is incorporated herein by reference. This document covers the environmental impacts of the MtoG project and is available on CEMVN's web site, http://www.mvn.usace.army.mil/prj/mtog. The MtoG project is awaiting Congressional authorization and the Programmatic Environmental Impact Statement (PEIS) Record of Decision has been sent to the Secretary of the Army for signing.

PUBLIC CONCERNS

Protection from devastating hurricanes is of significant concern to residents and businesses in Terrebonne and LaFourche Parishes.

DESCRIPTION OF THE PROPOSED ACTION

The proposed project, Reach J1 Levee, may become part of the proposed MtoG hurricane protection system and would consist of construction of a new levee linking a gap between existing levees. Thus the Reach J1 levee has needs and benefits, and is a stand-alone project, regardless of whether or not the proposed greater MtoG hurricane protection system is constructed. The Reach J1 Levee project is located on the west bank of Bayou Point-aux-Chenes along LA Highway 665 to Parish Road 73, approximately 16 miles south of Houma, Louisiana (figure 1). The Reach J1 levee is described as a 2.7 mile reach consisting of a segmented flood side borrow canal, a dual purpose marsh platform and levee berm, a consolidated fill levee, a T-wall at the pipeline crossing, a protected side berm, a protected side fishery access trenasse, a temporary construction access road, and improvements including culverts to the old board road to make it a permanent access road (see appendix A).

The levee would be constructed in two lifts, with the final height built to a design grade of +13 feet North American Vertical Datum 1988 (NAVD 88)[1]. Approximately 1.5 million cubic yards of fill would be used in the first lift, and 350,000 cubic yards in the second lift. The fill would come from two sites, one adjacent to the levee, and the other from a site near Montegut, LA. The adjacent borrow canal for fill material consists of a segmented channel at a depth of 26.5 feet, with a 58-foot bottom width, a 202-foot top width, and 1-foot vertical (V) and 3-foot horizontal (H) side slopes. Each segment of the borrow canal would be approximately 1,550 feet in length, separated by a 200 foot long segment of marsh. The dual-purpose marsh platform would be approximately 50 feet or 119 feet wide (extending up to 121-240 feet from center line of the levee) and constructed to an initial elevation of approximately 2 feet, which would be conducive to the development of long-term wetlands. Where there is no adjacent borrow canal, the marsh platform would be 50 feet wide, and adjacent to the borrow area, the platform would be 119 feet wide. The platform would provide new marsh habitat as mitigation for this project and would provide wave protection to the levee.

The levee would be built on geotextile fabric with compacted soils coming from adjacent local borrow and trucked in from an off-site borrow field. The wave berm / marsh platform on the flood side would have 1-ft V on 12-ft H side slopes. The levee would have 1-ftV on 4-ft H side slopes and would be built to a height of 14 feet with a 10-foot wide crown. On the protected (land) side of the levee, the slope would be 1-ft V on 4-ft H to the +6 ft elevation. From that point it would have a 1-ft V on 16-ft H side slope to the +2 foot elevation, then taper to natural ground. Each end of the new levee would connect with existing levees. To allow permanent access from the north, the old board road would be improved, including six 24-inch culverts.

A pile supported concrete T-wall would be constructed where a 20-foot high-pressure gas pipeline crosses the proposed levee alignment. The wall would be built to a height of +14.0 feet, would be approximately 120 feet long, and would tie into the levee at each end. A temporary road would be built to allow construction access to the T-wall. After construction, but no longer than one year, the temporary access road would be degraded to marsh height and a 10-foot wide by 2-foot deep trenasse would be cut where the road joins the new levee.

[1] All elevations are in NAVD 88 unless otherwise specified.

To ensure water drainage and to allow continued fisheries access on the protected (land) side of the levee, trenasses would be cut across existing solid marsh peninsulas where they intersect with the levee. The trenasses would be dug to a depth of 2 feet and would be 3-10 feet wide. Six 24-inch culverts would be installed in the old board road to assure continuation of drainage and water circulation.

Off-site Borrow

Additional borrow materials for levee construction would be excavated from a 100-acre site located off Aragon Road and adjacent to Bayou la Cache, near Montegut, Louisiana (figure 2). Materials would be trucked to the levee site in standard 14-20 cubic yard dump trucks or 24-30 cubic yard trailer bed trucks. The first lift is estimated to take 12 months, and the second lift is estimated to take 9 months, with approximately 4 years between lifts. Approximately one million cubic yards of fill (of the total 1.5 million cubic yards) would be taken from this site in the first lift, and approximately 350,000 cubic yards in the second lift.

Figure 2. Off-site borrow field adjacent to Bayou la Cache, access off Aragon Road near Montegut, Louisiana.

ALTERNATIVES TO THE PROPOSED ACTION

Two alternatives to the proposed action were considered. These alternatives were: No-action, and construction of a sand based levee.

No-Action.

The proposed action would not be constructed by the CEMVN.

Construction of a sand based levee.

The levee would be constructed with a sand base to an elevation of +4.0 feet, placed on geotextile fabric, and topped with local borrow material from an adjacent borrow site. Since no sand source adjacent to the levee is available, an offsite borrow source for the sand would need to be secured and transported in by truck or barge. Approximately 315,000 cubic yards of sand would need to be hauled in for construction of the levee base. With construction of a sand based levee, the levee width would be 14 feet narrower

compared to construction with all local borrow (table 1). In addition to the levee width reduction, the stability berm and borrow canal widths would also be reduced by 7 feet and 28 feet respectively. These reductions total 49 feet, which makes the right-of-way template for this section a total of 600 feet.

Table 1. Levee Alternative Comparison

Description	Local borrow only	Sand based levee
Right-of-Way Width (at widest point)	650 ft	600 ft
Levee Width	230 ft	216 ft
Stability Berm Width	50 and 119 ft	50 and 112 ft
Borrow Canal Width	202 ft	174 ft
Acreage within Right-of-Way	129 acres	104 acres
Mitigation Acreage (stability berm)	23 acres	21 acres

ENVIRONMENTAL SETTING

GENERAL

The project is located on the west-descending bank of Bayou Pointe-aux-Chenes, on the west side Louisiana Highway 665 in Terrebonne Parish, in southern Louisiana, approximately 16 miles southeast of Houma. All of the project area is low lying coastal marsh with only a slight rise to form the ridge upon which the highway is built. The coastal marsh provides important winter habitat for migratory birds, because it is on the southern end of the Mississippi Flyway, as well as nursery habitat for larval fish species. Vegetation types are mainly marsh grasses.

CLIMATE

The climate along the Louisiana coast is subtropical, with long, hot summers and brief, mild winters. Winds during the summer are generally from the south, bringing warm, moist air from the Gulf of Mexico, which can produce periods of intense rainfall associated with thunderstorms. The growing season lasts 317 days and average rainfall at Houma is approximately 62 inches per year (Muller and Fielding 1987; Sevier 1990). During the winter, the area experiences alternating cold and warm air as continental fronts pass through from the northwest. Snow is very infrequent. Hurricanes and tropical storms can occur in Louisiana from June through November, but are most likely to occur in July and September (Muller and Fielding 1987). These storms can bring periods of intense rainfall and wind accompanied by storm surges from the Gulf of Mexico.

Although it is assumed that storms with higher wind speeds produce more damage, Hurricane Juan, which was only a Category 1 storm, produced significant damage from tidal flooding. These storms can also produce large amounts of rain in a given location, with 10-12 inches not unusual. From 1870 to 1989, 43 hurricanes and 56 tropical storms have struck Louisiana (Roth 1998). Tropical storms occur with a frequency of approximately one storm every 1.6 years (Simpson and Lawrence 1971) and hurricanes occur once every 4.1 years within a 75 mile radius of New Orleans (U.S. National Hurricane Center 1995). Louisiana has seen 25 hurricanes from 1899-1992 (Neumann et al. 1993). The most recent storms of note within the study area, were Hurricanes Isidore and Lili, which struck within two weeks of each other in late September/early October 2002, and Tropical Storm Bill in June 2003.

GEOLOGY and SOILS

Levee and Adjacent Borrow Site

Based on the soils data collected from September to October 2002, (T. Baker Smith and Son, Inc.; Houma, LA) the soil can be classified as very soft to soft gray clay with silt lenses and layers. Either open water or a layer of soft brown humus exists at the surface. At some locations, thin layers of soft to medium stiff gray and tan clay exist between the 3 and 10-foot depths. Also at some locations on the southern end of the project a thin layer of loose gray silty fine sand exists between the 20 to 30 foot depths. Soils also include brackish marsh clays, mucky clays, and layers of peat. The presence of floodwaters for long periods has prevented extensive oxidation of the organic residues, and a moderately thin layer of medium, fine, and coarse fibrous peat has accumulated at the surface. The peat is underlain at moderately shallow depths by dark-colored alluvial clays and mucky clays that have been influenced or reworked by gulf tides and waves (U.S. Department of Agriculture, Soil Conservation Service 1960).

Off-site Borrow

Soils in the off-site borrow are described as Mhoon and Sharkey series. The Mhoon soils are imperfectly drained soils of the bottomlands with stratified silt loam, silty clay loam, and silty clay sediments. They occur on sites well above the present normal overflow from streams. The stratified sediments were deposited on and near the crests of the natural levee ridges during the overflow from distributary streams and crevasse channels of the several delta systems of the Mississippi River. Mhoon soils commonly occur on level to nearly level relief, although small areas near stream channels have slopes of 3 percent. Mhoon soils are closely associated with lower lying Sharkey soils, which consists of dark-colored soils of the bottomlands that contain moderate amounts of organic matter as a result of repeated deposits of clays and organic residues. These fine-textured sediments were deposited in depressions, such as shallow lakes and embayments, along the borders of the natural levee ridges. For both soil types runoff and internal drainage is slow to very slow (U.S. Department of Agriculture, Soil Conservation Service 1960).

SIGNIFICANT RESOURCES

This section contains a description of significant resources and the impacts of the proposed action on these resources. The significant resources described in this section are those recognized by: laws, executive orders, regulations, and other standards of National, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public.

WETLANDS

This resource is institutionally significant because of: the Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968. Wetlands are technically significant because: they provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and nonconsumptive recreational opportunities. Wetlands are publicly significant because of the high value the public places on the functions and values that wetlands provide.

Levee and Adjacent Borrow Site

Existing Conditions

The project area consists primarily of brackish marsh. Salinities average approximately 8 parts per thousand (ppt) and range from 1-18 ppt (Chabreck 1982). Brackish marsh usually occurs as a transitional area between salt marsh and intermediate marsh, although it may occasionally be found adjacent to the gulf. Brackish marsh is tidally influenced and is dominated by salt tolerant grasses. Plant diversity and soil organic matter content is higher than salt marsh (Faulkner 2002). The dominant brackish marsh plant is saltmeadow cordgrass, and may account for one-half of the species composition (Gosselink 1984; Conner and Day 1987). Other important species include seashore saltgrass, camphorweed, and coastal water-hyssop (Conner and Day 1987). Open water areas found in the project area contains submerged and floating-leafed vegetation, and is typical of water bodies occurring in forested wetlands and low salinity marshes. Submerged aquatic vegetation (SAV) in the study area includes marsh hay cordgrass, smooth cordgrass, three corner grass, widgeongrass, and Eurasian milfoil.

In the study by Peters et al. (1978), 16 wetland groups provided habitat for 59 percent of the U.S. commercial fisheries landings by weight. The Louisiana Department of Natural Resources states that over 75 percent of the state's commercially harvested fish and shellfish species are dependant on wetlands. Most of these species utilize estuarine wetlands during young and larval stages of their life cycle. Salt marshes support large populations of wading birds, including egrets, herons, willets, and Roseate spoonbills. Coastal marshes also support vast populations of migratory waterfowl, which use the marshes mostly as wintering grounds, but also as stopover areas during fall and spring migrations. A number of birds, including wrens, sparrows, gulls, and terns feed and nest in the marsh grasses (Mitsch and Gosselink 2000).

One of the largest issues facing coastal marshes in Louisiana is subsidence and the gradual conversion to open water. Turner and Rao (1990) and Nyman et al. (1993) found that marsh appears to be breaking up internally, rather than eroding at the edges. Boesch et al (1994) concludes that wetland loss is a consequence of sinking land and inadequate soil replenishment rather than erosion of its edges, filling, or draining. Where tidal energy is low and Mississippi River sediments are no longer supplied to the coastal marshes (they are channeled directly into deep offshore waters), accretion is not keeping up with submergence and salt marshes are degrading rapidly. When marsh accretion is unable to keep up with the combined effects of subsidence and sea-level change, marsh plant growth is stressed by increased flooding (Mitsch and Gosselink 2000). From U.S. Geological Service land survey maps, approximately 600 acres of marsh has been converted to shallow open water between 1978 and 2000, a marsh loss rate of approximately 1.3 percent per year.

The proposed levee is on the eastern edge of a wetlands restoration project, which started construction in February, 2005. Ducks Unlimited (DU) in conjunction with the North American Wetlands Conservation Council proposes to install four hydrologic structures and an exterior low levee in order to restore historic salinities and hydrology to 4,736 acres of degraded marsh on Pointe-aux-Chenes Wildlife Management Area[2]. Over the 25-year project life, it would allow reestablishment of submerged aquatic vegetation, and eventually restore large areas of degraded open marsh to a more natural interspersion of emergent marsh and open-water ponds thus providing numerous benefits to waterfowl, shorebirds, wading birds, and estuarine-dependent fish species.

[2] http://www.ducks.org/conservation/Projects/Southern/Pointeauxchenes.asp

An intra-agency Habitat Evaluation Team (HET) was formed to collect and evaluate data required for the Wetland Value Assessment (WVA) of the proposed Reach J1 levee. For the purpose of the WVA, the land loss rate was calculated to be slightly less (1.17 percent, compared to 1.3 percent) during the first 25 years because of the DU project, after which the land loss rates are projected to resume to the 1.3 percent rate. The complete WVA is in appendix B of this document.

Future Conditions with No-Action

The wetlands land loss rate was projected to average 1.17 percent in the first 25 years due to the DU project, then at a rate of 1.3 percent per year. These rates were determined by comparing land area in1978 to 2000 U.S. Geological Service land survey maps. At the end of 50 years, approximately 47 percent of existing marsh would become shallow open water (table 2).

Table 2. Acres marsh in project area, comparing future without and future with proposed project plan

Land area	Acres existing marsh	Future without project		Future with project	
		25 yrs	50 yrs	25 yrs	50 yrs
Levee and borrow	23	10.8	7.3	0	0
Floodside berm (mitigation berm)	1.8	1.3	0.9	16	10.8
Protected side marsh	80.9	57	38	61	48
Total	**105.7 acres**	**49.7 acres**	**46.2 acres**	**77 acres**	**58.8 acres**

Future conditions with construction of consolidated fill levee (Proposed Action)

With implementation of the proposed action, approximately 23 acres of existing marsh would be impacted with the construction of the levee and borrow canal. However, as mitigation, a 50 to119-foot wide berm would be built on the flood side adjacent to the levee for the entire length. This mitigation berm would be planted at the end of the construction of the first lift, and would create approximately 23 acres of emergent marsh habitat. As shown in table 2, this new marsh would be expected to degrade during the project life, so that in 50 years, approximately 11 acres would remain. The HET determined that the marsh on the protected (land) side of the levee would be protected from storm surge wave action, thus slowing the rate of marsh erosion. To ensure drainage from rainwater, allow water circulation, and fisheries access, six 24-inch culverts would be placed in the old board road on the north end of the protected side and trenasses would be cut across existing marsh peninsulas where they intersect with the new levee. Table 4 indicates the impacts to marsh and the value of the emergent marsh as expressed in average annual habitat units (AAHUs).

Future with construction of a sand-based levee

Wetland impacts would be less with the narrower footprint of this alternative. The impacts to the protected side marsh would not change, as the edge of the levee on that side would remain the same. Currently there are 94.8 acres of marsh in the construction right-of-way, which at the 1.17 percent and 1.3 percent land loss rates (years 1-25 and 26-50 respectively) approximately 48 acres would remain in 50 years (table 3) without construction of this alternative. As in the construction of the proposed action plan, the land loss rates are anticipated to be slightly less for the first 25 years due to benefits gained from the adjacent DU project. With construction of the narrower footprint levee, the stability and marsh creation mitigation berm on the flood side of the levee would be

50 or 112 ft wide, which is 20.8 acres. At the end of the 50-year project life, approximately half of this berm, incorporating original and created marsh, is expected to remain.

Table 3. Acres of marsh impacted from sand-based levee construction

Land Area	Acres existing marsh	Future without project		Future with project	
		25 yrs	50 yrs	25 yrs	50 yrs
Levee and borrow	11.6	8.2	5.5	0	0
Marsh creation berm (mitigation berm)	2.3	1.6	1.1	14.9	10.1
Protected side marsh	80.9	57	38	61	48
Total	**94.8 acres**	**66.8 acres**	**44.6 acres**	**75.9 acres**	**48.1 acres**

With the narrower footprint of the sand based levee, impacts to the marsh in AAHUs would be less compared to the consolidated fill footprint, 5.36 AAHUs degraded compared to 15.80 AAHUs degraded respectively (table 4). The marsh creation (mitigation) berm would create 5.36 AAHUs with the sand based levee as compared to 5.76 AAHUs with the consolidated fill (proposed plan) levee footprint. Assessment for the marsh on the protected side, which would become enclosed with the project, remains the same under either alternative. With the narrower footprint, less mitigation would be required. Both plans have sufficient mitigation designed into the project, as the net benefits for either plan would be greater than zero.

Table 4. Net Change in Average Annual Habitat Units from the Wetland Value Assessment of Alternatives

Land Area	Consolidated Fill Footprint	Sand and Consolidated Fill Footprint
Enclosed / protected side marsh		
A. Emergent Marsh Habitat Net AAHUs	14.58	14.58
B. Open Water Habitat Net AAHU's	5.45	5.45
Net Benefits (2.6xEMAAHUs + OWAAHUs)/3.6	**12.04**	**12.04**
Marsh creation berm / stability berm		
A. Emergent Marsh Habitat Net AAHUs	11.12	10.25
B. Open Water Habitat Net AAHU's	-8.18	-7.36
Net Benefits (2.6xEMAAHUs + OWAAHUs)/3.6	**5.76**	**5.36**
Levee and borrow		
A. Emergent Marsh Habitat Net AAHUs	-3.6	-2.74
B. Open Water Habitat Net AAHU's	-47.51	-37.99
Net Benefits (2.6xEMAAHUs + OWAAHUs)/3.6	**-15.80**	**-12.53**
Total Benefits in AAHUs Due to Project (sum of Net Benefits)	**2.00**	**4.87**

Off-site Borrow

Existing Conditions

At one time the off-site borrow was considered wetlands, but the area has been under pump and drain since the early 1950s. Rainwater no longer drains overland or remains

on the surface, but now flows into ditches and then into Bayou la Cache. The site has been farmed for sugarcane in the past, and is currently managed for hay and cattle grazing. A few trees, mainly water oaks, grow in the open areas. Bottomland Hardwoods occur along the west side of the field adjacent to Bayou la Cache and along interior drainage ditches. The species composition occurring on these sites are primarily water oak, overcup oak, Drummond red maple, and willows. Some swamp species such as baldcypress, tupelo gum, and palmetto also occurs on these sites. At the southern end of the borrow area, is a borrow pit where the current landowner has removed fill dirt. Wetland plants have not yet recolonized this disturbed area.

Future with No-Action

Without implementation of the proposed action, the off-site borrow would most likely be continued to be farmed, and no major quantities of earthen materials would be removed.

Future with construction of consolidated fill levee (Proposed Action)

With implementation of the proposed action, approximately 100 acres would be impacted by the removal of materials for levee construction. The land would no longer be used for farming or pasture. The borrow area would most likely fill with water, and could be potentially used as a pond for fisheries. The edges could be revegetated by wetland species.

Future with construction of a sand-based levee

With implementation of a sand-based levee, the 100 acre off-site borrow would also be used, and impacts would be the same as with construction of the consolidated fill levee.

NON-WET LAND RESOURCES / UPLAND RESOURCES

These resources are institutionally significant because of the Food Security Act of 1985, as amended; the Farmland Protection Policy Act of 1981; and the Fish and Wildlife Coordination Act of 1958, as amended. These resources are technically significant because of the habitat provided for both open and forest-dwelling wildlife, and the provision or potential for provision of forest products and human and livestock food products. These resources are publicly significant because of their present economic value or potential for future economic value.

Levee and Adjacent Borrow Site

The Levee and adjacent borrow site does not contain non-wetland or upland resources.

Off-site Borrow

Existing conditions

The off-site borrow area has been under pump and drain since the early 1950s. The land is currently managed for hay and cattle grazing, but has been farmed for sugarcane in the past. The Natural Resources Conservation Service determined that 25 of the 100.8 acres is considered “Prime and Unique Farmland” in their January 20, 2005 Farmland Conversion Impact Rating and coordination letter (appendix C). This determination is primarily based on soil type and the historic use of the land for farming within the past 10 years.

Future with No-Action

The off-site borrow would most likely be continued to be farmed, and no major quantities of earthen materials would be removed.

Future with construction of consolidated fill levee (Proposed Action)

Approximately 100 acres would be impacted by the removal of materials for levee construction. The land would no longer be used for farming or pasture. The 25 acres of Prime and Unique Farmlands would be lost for future use of farming. The borrow area would most likely fill with water, and could be potentially used as a pond for fisheries.

Future with construction of a sand-based levee

The 100 acre off-site borrow would also be used, and impacts would be the same as with construction of the consolidated fill levee.

FISHERIES

This resource is institutionally significant because of the Fish and Wildlife Coordination Act of 1958, as amended. Fisheries resources are technically significant because: they are a critical element of many valuable freshwater and marine habitats; they are an indicator of the health of various freshwater and marine habitats; and many species are important commercial resources. Fisheries resources are publicly significant because of the high priority that the public places on their esthetic, recreational, and commercial value.

Levee and Adjacent Borrow Site

Existing Conditions

Wetlands in the project area are habitat for small resident fishes and shellfishes such as least killifish, rainwater killifish, sheepshead minnow, mosquitofish, sailfin molly, grass shrimp, and others. Those species are typically found along marsh edge or among submerged aquatic vegetation, and provide forage for a variety of fish and wildlife.

Coastal marshes within the levee project area also provide nursery habitat for many estuarine-dependent commercial and recreational fishes and shellfishes. Because of the protection and abundant food afforded by those wetlands, they are critical to the growth and production of species such as blue crab, white shrimp, brown shrimp, Gulf menhaden, Atlantic croaker, red drum, spotted seatrout, black drum, sand seatrout, spot, southern flounder, striped mullet, and others. Those species are generally most abundant in the brackish and saline marshes; however, blue crab, Gulf menhaden, Atlantic croaker, and several other species also utilize fresh and low-salinity marshes.

Because tidal marshes provide essential nursery habitat, commercial shrimp harvests are positively correlated with the areas of tidal emergent wetlands, such as those in the project area (Turner 1977 and 1982). Future commercial harvest of shrimp and other fishes and shellfishes could be adversely impacted by the high rates of marsh loss throughout the project area (Turner 1982).

The American oyster occurs throughout brackish marshes in south Louisiana and in the project area. Currently there are no oyster leases in the project area.

Future Conditions with No-Action

Nursery habitat estuarine species would continue to be lost as the marsh subsides, and converts to shallow open water.

Future with construction of consolidated fill levee (Proposed Action)

Approximately 130 acres of marsh and shallow open water would be directly disturbed during excavation of the flood side borrow canal, and construction of the levee and mitigation berm. Once construction is complete, the levee would be seeded with cover grass, the mitigation berm would be planted with appropriate species and the areas not maintained by mowing would be allowed to resume the successional process. The

new flood side borrow canal would provide deeper aquatic habitat for wetland species. The existing highway culverts would assure fisheries access on the protected side of the levee, addition of culverts in the old board road in the northern end of the project, and digging trenasses across marsh peninsulas that would connect to the new levee.

Future with construction of a sand-based levee

Approximately 104 acres of marsh and shallow open water would be directly disturbed during construction. Once the project was complete, the future would be similar to conditions with construction of consolidated borrow.

Off-site Borrow

Existing Conditions

Currently the off-site borrow is dry land, and therefore does not have any fish.

Future with No-Action

Without use of the 100 acres for borrow materials, no fish habitat would exist.

Future with construction of consolidated fill levee (Proposed Action) or a sand-based levee

The site would be excavated for borrow materials, and could become flooded by seasonal high water flooding or rainfall. Potentially, a pond would form, but without connection to regular fresh water inflows, water quality for fish would be marginal. Fish species tolerant of poorer water quality, such as catfish, might survive.

WILDLIFE

This resource is institutionally significant because of the Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918. Wildlife are technically significant because: they are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources. Wildlife are publicly significant because of the high priority that the public places on their esthetic, recreational, and commercial value.

Levee and Adjacent Borrow Site

Existing Conditions

Brackish marshes, such as those in the project area, may also support large numbers of puddle ducks. Puddle ducks that may occur in the area include mallard, gadwall, northern pintail, blue-winged teal, green winged teal, American widgeon, wood duck, and northern shoveler. The resident mottled duck may also utilize project area marshes. Diving ducks prefer larger ponds and lakes similar to those in the project area. Common diving duck species include lesser scaup, canvasback, redhead, ring-necked duck, red-breasted merganser, common merganser, and hooded merganser. Other migratory game birds found in costal marshes include the king rail, clapper rail, Virginia rail, sora rail, American coot, common moorhen, and common snipe.

Marshes and associated shallow open water areas similar to those in the project area provide habitat for a number of wading birds, shorebirds, seabirds, and other non-game birds. Common wading birds include the little blue heron, great blue heron, green backed heron, yellow crowned night heron, black crowned night heron, great egret, snowy egret, cattle egret, reddish egret, white-faced ibis, white ibis, and roseate spoonbill. Shorebirds include the killdeer, American avocet, black-necked stilt, common skimmer, herring gull, laughing gull, and several species of terns. Other nongame birds such as boat-tailed grackle, red winged blackbird, seaside sparrow, olivaceous cormorant, northern harrier, belted kingfisher, and sedge wren also utilize coastal areas.

Common mammals occurring in the project area marshes include nutria, muskrat, mink, river otter, raccoon, swamp rabbit, white-tailed deer, and coyote.

In brackish and saline marshes, similar to those in the project area, reptiles are limited primarily to the American alligator and the diamond-backed terrapin, respectively.

Future Conditions with No-Action

Wildlife access would be expected to remain similar to existing conditions. However, the availability of suitable habitat would decline as the existing marsh is converted to shallow open water.

Future with construction of consolidated fill levee (Proposed Action)

Approximately 130 acres of marsh and shallow open water would be directly disturbed during excavation of the flood side borrow canal, and construction of the levee and mitigation berm. Once construction is complete, the levee would be seeded with cover grass, the mitigation berm would be planted with appropriate species and the areas not maintained by mowing would be allowed to resume the successional process. The constructed 42-acre mitigation berm/new marsh would provide new habitat for wetland species.

Future with construction of a sand-based levee

Approximately 104 acres of marsh and shallow open water would be directly disturbed during excavation of the flood side borrow canal, and construction of the levee and mitigation berm. Once all construction activities have been completed, the future with this alternative is expected to be the same as with construction of the proposed action plan.

Off-site Borrow

Existing Conditions

The borrow site is located in an area that has been under pump and drain since the early 1950s. In the past it was farmed for sugarcane, and presently it is farmed for hay, used as livestock pasture, and has a small borrow pit. The site has a variety of habitats for upland wildlife species: open fields for foraging, lines of trees and shrubs along drainage ditches and denser tree growth along Bayou la Cache providing cover. Upland wildlife species such as white-tailed deer, turkeys, coyotes, rabbits, skunks, armadillos, and squirrels are expected to be found in the area.

Future with No-Action

Current land uses and management strategies are expected to remain the same.

Future with construction of consolidated fill levee (Proposed Action) or a sand-based levee.

The 100 acre borrow site would be directly disturbed during excavation of materials for Reach J1 or future MtoG projects. Upland species potentially found in the off-site borrow area would be able to move off-site during construction, however the habitat would be changed permanently as materials are removed and the borrow site is converted to a pond, making it no longer available for foraging. Trees and shrubs in the interior would also no longer be available for cover or nesting. Trees occurring along the bayou are outside the proposed excavation area, so they would still be available for use.

ESSENTIAL FISH HABITAT

This resource is institutionally significant because of the Magnuson-Stevens Fishery Conservation and Management Act. Essential Fish Habitat (EFH) is technically significant because, as the act states, EFH is "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." EFH is publicly significant because of the high value that the public places on the seafood and the recreational and commercial opportunities EFH provides.

Levee and Adjacent Borrow Site

Existing Conditions

Wetland and aquatic sites in the project area consist of EFH for postlarval, juvenile, and sub-adult life stages of red drum, brown shrimp, and white shrimp. Specific categories of EFH in the project area include all estuarine waters and substrates (mud, shell, rock, and associated biological communities), including the sub-tidal vegetation (submerged aquatic vegetation and algae) and adjacent inter-tidal vegetation (marshes) (table 5). Detailed information on Federally managed fisheries and their EFH is provided in the 1998 generic amendment of the Fishery Management Plans for the Gulf of Mexico prepared by the Gulf of Mexico Fishery Management Council (GMFMC). The generic amendment was prepared as required by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; P.L. 104-297). In addition to being designated as EFH for red drum, brown shrimp, and white shrimp, coastal wetlands provide nursery and foraging habitat that supports economically important marine fishery species such as spotted seatrout, southern flounder, Atlantic croaker, gulf menhaden, striped mullet, and blue crab. These species serve as prey for Federally managed fish species such as mackerels, snappers, groupers, billfishes, and sharks.

Table 5. Essential Fish Habitat for Life Stages

Species	Life Stage	Essential Fish Habitat
Brown Shrimp	Sub-adult	Mud bottoms and marsh edge.
	Postlarval and Juvenile	Turbid estuaries, marsh edge, submerged aquatic vegetation, tidal creeks, inner marsh, shallow open water, nonvegetated bottom, and muddy substrates.
White Shrimp	Sub-adult	Mud bottoms and marsh edge.
	Postlarval and Juvenile	Marsh edge, submerged aquatic vegetation, marsh ponds, inner marsh, oyster reef, nonvegetated bottom, muddy substrates with high organic content, and turbid estuaries.
Red Drum	Sub-adult	Mud bottoms and oyster reefs.
	Juvenile	Submerged aquatic vegetation, estuarine mud bottoms, marsh/water interface, oyster reefs.
(Source: Gulf States Marine Fish Commission (http://www.gsmfc.org), habitat association tables for the 1998 Generic Amendment for Addressing EFH Requirements).		

Future Conditions with No-Action

Fisheries access would be expected to remain similar to existing conditions. However, the availability of suitable habitat would decline as the existing marsh is converted to shallow open water.

Future with construction of consolidated fill levee (Proposed Action)

Approximately 130 acres[3] of shallow open water and marsh could be disturbed during the construction phase. From this, approximately 75 acres[4] are expected to be lost as habitat under the footprint of the levee. An additional 14 acres[5,] would change as material is removed from the borrow area, converting it from shallow open water and marsh to an approximately 15 foot deep canal. To mitigate for this loss, approximately 23 acres of new marsh would be created on the flood side of the levee. On the protected side of the levee, fisheries access and water circulation would be ensured by cutting a trenasse along the toe of the levee and installation of culverts in the old board road. The area would continue to have fisheries access and influence from tidal flows through culverts and trenasses that connect the marsh to Bayou Pointe-aux-Chenes, and thus to Timbalier and Terrebonne Bays.

Future with construction of a sand-based levee

Approximately 104 acres of shallow open water and marsh would be disturbed during construction. From this, approximately 71 acres[6] are expected to be lost as habitat under the footprint of the levee. An additional 12.4 acres[7] would change as material is removed from the borrow area, converting it from shallow open water and marsh to an approximately 15 foot deep canal. To mitigate for this loss, approximately 21 acres of new marsh would be created on the flood side of the levee. All other conditions are expected to be similar to those of the consolidated fill levee alternative.

Off-site Borrow

Existing Conditions and Future Without Project

As the off-site borrow is entirely uplands, there is no EFH.

Future with construction of consolidated fill levee (Proposed Action) or a sand-based levee

The pit and subsequent pond that would be created by excavation of soils would not be directly connected to flowing water so it is not expected to become EFH.

ENDANGERED OR THREATENED SPECIES

This resource is institutionally significant because of: the Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940. Endangered (E) or threatened (T) species are technically significant because the status of such species provides an indication of the overall health of an ecosystem. These species are publicly significant because of the desire of the public to protect them and their habitats.

Levee and Adjacent Borrow Site

Existing Conditions

Of the 29 Endangered (E) or Threatened (T) species listed in Louisiana[8], 9 are listed in Terrebonne and LaFourche Parishes. Possible listed species in the project area include the bald eagle (T), brown pelican (E), piping plover (T), West Indian manatee (E); green sea turtle (T), loggerhead sea turtle (T); and leatherback, hawksbill, and Kemp's Ridley sea turtles (all E). Eagles and pelicans could forage or rest in the project area, but are not

[3] levee and borrow canal's 107 acres plus 23 acres mitigation berm

[4] 14256 feet long X 230 feet wide levee = 3278880 sq ft = 75.3 acres

[5] 3109 feet long X 202 feet wide borrow canal = 628018 sq ft = 14.4 acres

[6] 14256 feet long x 216 feet wide levee = 3079296 sq ft = 70.7 acres

[7] 3109 feet long x 174 feet wide borrow canal = 540966 sq ft = 12.4 acres

[8] U.S. Fish and Wildlife Service web page, http://ecos.fws.gov/servlet/TESSwebpage

know to nest in the area. The closest known bald eagle nests are approximately 5 miles away. As piping plovers prefer muddy flats or non-vegetated shorelines, they are expected to be only occasional visitors. Of the listed marine species, the manatee and the five sea turtles, only the Kemp's Ridley sea turtle is likely to enter coastal bays and estuaries; however, they tend to concentrate around the mouths of major rivers and not in inner shallow marshes. Sea turtles are rare in Louisiana's inshore waters and most reported occurrences are in offshore waters (CEMVN, 1992). The West Indian manatee is not expected to occur in the project area as their range is further east, and their preferred habitat is open waters, bays, and rivers, whereas the project area is shallow marsh or shallow open water.

Future Conditions with No-Action

Threatened and/or endangered species' use of the project area would be expected to remain similar to existing conditions. However, the availability of suitable habitat would decline as the existing marsh is converted to shallow open water.

Future with construction of consolidated fill levee (Proposed Action)

There should be no direct or indirect affects on threatened or endangered species. Construction of this project is expected to commence during the winter months when turtles and manatees are least likely to be in Louisiana waters, so they should not be affected by the project. Bald eagles and brown pelicans may be occasional visitors in the project area, but the Bayou Pointe aux Chenes is not known to be a nesting or major feeding ground. In a fax dated July 2, 2004, the USFWS concurred with CEMVN that the proposed action would not significantly affect listed or proposed threatened or endangered species.

Future with construction of a sand-based levee

Affects to threatened or endangered species are expected to be similar to that of the consolidated fill alternative.

Off-site Borrow

Existing Conditions

Of the 29 Endangered or Threatened species listed in Louisiana, nine are listed in Terrebonne Parish. The only listed species that might occur in the borrow site project area is the bald eagle (T); all other species favor shoreline habitats or are aquatic. Bald eagles are not known to nest in the immediate project area, with the closest nest more than 2.5 miles away, but may forage or rest in the area.

Future with No-Action

Without excavation of soils from the project area, conditions for threatened and/or endangered species use of the project area would be expected to remain similar to existing conditions.

Future with construction of consolidated fill levee (Proposed Action) or a sand-based levee

The proposed borrow site is more than 2.5 miles from the closest known bald eagle nest, so excavation of soils is not likely to adversely affect any nesting eagles. Other threatened or endangered species that might be found in the area would be transitory and would not become trapped by excavation activities. In correspondence dated December 28, 2004, the USFWS concurred with CEMVN's determination that the proposed action would have no direct or indirect impacts on listed or proposed threatened and/or endangered species.

CULTURAL RESOURCES

This resource is institutionally significant because of: the National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979; as well as other statutes. Cultural resources are technically significant because of: their association or linkage to past events, to historically important persons, and to design and/or construction values; and for their ability to yield important information about prehistory and history. Cultural resources are publicly significant because preservation groups and private individuals support their protection, restoration, enhancement, or recovery.

Cultural Resources surveys have been conducted in lower Terrebonne Parish since 1926. The most recent and synthesized of these are Weinstein and Kelley (1992) and Robblee et al. (2000). Numerous earthen mounds and shell middens have been located and recorded. Prehistoric settlement in lower Terrebonne parish dates as early as the Marksville Period (A.D. 1 – 400) and includes mound sites, hamlets, and shell middens. Societies in the project area subsisted on marsh resources such as clams, fish, mammals, birds, and reptiles, while shellfish were also utilized as a food source and to provide a base on which to settle. By the Coles Creek Period (A.D. 700 – 1200), settlements in the region may have been organized as major mound sites surrounded by satellite villages and seasonal camps. Villages were concentrated on stable levee surfaces or at the confluence of distributaries. Both year round occupation and seasonal movement have been suggested for the inhabitants of the area. During Plaquemine times (A.D. 1200 – 1700) the settlement pattern suggests a complex social hierarchy, with large ceremonial sites composed of multiple mounds surrounding a central plaza, and smaller villages and hamlets scattered throughout the area. Non-mound sites that have been located are on elevated natural levees and seem to have focused on the cultivation of crops. The majority of known prehistoric sites located in the vicinity of the project area date to this late prehistoric period, and suggest a significant occupation of the region.

The early historic period in southeast Louisiana is marked by increasing settlement and European dealings with Native American tribes. Early French writings describe a native cultural landscape of small tribal groups and shifting alliances. The most is known about the Chitimacha Indians, a federally recognized Native American tribe that claims ties to much of south Louisiana as its ancestral homeland, and is currently clustered around Charenton in St. Mary Parish. In addition to the many ancient Chitimacha village locations recorded on State Records, the Chitimacha Indians remember, respect, and maintain numerous traditional cultural properties within south Louisiana.

Although it is generally accepted that the Houma Indians were located near the confluence of the Red and Mississippi rivers during the early historic period, some historic accounts suggest that they were virtually wiped out by fighting and other causes of death during the years at the end of the 17th century and the beginning of the 18th century. By the middle of the 20th century the Houma had grown, and were settled in Terrebonne and Lafourche parishes. Descendents of these people are organized today as the United Houma Nation, but are not federally recognized as a Native American tribe.

After early European exploration of the area, the French began colonization efforts in the early 18th century. Settlement was sparse until the Acadians began arriving ca. 1765, and their influence persisted throughout the Antebellum Era. The Civil War left the project vicinity relatively unaffected, but after the Civil War all of south Louisiana had a hard task of recovery following the abolition of slave labor and war-related destruction of levees and other aspects of infrastructure. New plantations and new economies began to develop. By the late nineteenth century, small communities were emerging along the bayous. Population fluctuations took place as blacks, the predominant population before the Civil War, migrated outward to seek more opportunities.

The growth of the sugar industry was a boom to the area, and in 1917 the first commercial gas well struck near Montegut. Numerous oil and gas fields dot the region today. The shrimping industry grew as innovations occurred that allowed greater catches to be more easily retrieved and distributed. Canal systems and the Intracoastal Waterway have made a large portion of the project vicinity navigable by water, which has aided in the distribution of all resources. Today, the project vicinity is a vital economic area with diverse productive strategies and diverse peoples.

Levee and Adjacent Borrow Site

Existing Conditions

One cultural resource site is known to exist within the project area for the levee and adjacent borrow site. Site 16TR33 is a small prehistoric truncated earthwork near Bayou Pointe aux Chenes. The site also consists of prehistoric refuse and was initially reported in 1952 to contain an historic rectangular brick structure atop the earthwork. R. Christopher Goodwin and Associates, Inc. tested the site in the mid 1990s, and concluded that the mound was still intact and that an associated midden may lie deeply buried in the surrounding marsh soils. An archeaologist and geologist from CEMVN re-visited the site in 2004, and collected vibracore samples to determine if midden was present within the current project area. No midden deposits were exposed or suggested by any of these vibracore samples.

Future Conditions with No-Action

Site 16TR33 is exposed to forces of shoreline erosion. The site could be destroyed. No other cultural resources are known to exist within the currently defined project area, but unknown resources would be exposed to the same forces of erosion and would face the same possibilities of destruction.

Future with construction of consolidated fill levee (Proposed Action)

With implementation of the proposed action, site 16TR33 would face possible damage during the construction phase of the proposed project. Site 16TR33 does not lie within the proposed levee footprint, but does lie within the Right-of-Way and could therefore be exposed to damage from heavy equipment and other operational processes. Vibracore samples collected during 2004 define the edges of the site in the vicinity of the project Right-of-Way.

A “no work zone” would be defined around the known edges of the site, and the Right-of-Way would be adjusted such that no disturbance is brought to the site. An archaeologist would be present at any pre-construction conference, to inform all project individuals of the necessary precautions in this area. An archaeologist would be present on site during construction in the vicinity of site 16TR33, and would act quickly to protect the site if remains are unexpectedly discovered.

When construction of the levee is finished, site 16TR33 would be protected from further erosion by the presence of the levee. In addition, to the extent that soils are allowed to accumulate and fill in on the landside of the levee, site 16CM33 would become more deeply buried and better protected from all other forces of erosion and possible destruction.

Future with construction of a sand-based levee

Construction of a sand-based levee would not change any of the risks or benefits to site 16TR33, from those as outlined for the Proposed Action. The same steps to define a “no work zone” and for an archaeologist to be present during pre-construction and construction, would be in place.

Off-site Borrow

Existing Conditions

No cultural resources are known to exist within the proposed Robert Neil off-site borrow area. The proposed borrow area occupies an agricultural field and has seen disturbance from plow and planting. An archaeologist from CEMVN visited the proposed borrow area in November of 2004. No evidence of historic or prehistoric cultural resources was detected on the surface or in the soils exposed via plow activity. A total of 31deep soil borings were excavated within the proposed borrow area. Profiles from these borings do not suggest the presence of any buried prehistoric or historic resources, nor do they suggest high-potential buried surfaces that may have at one time been inhabited.

Future Conditions with No-Action

Any unknown and deeply buried cultural resources would remain undisturbed by proposed excavation procedures.

Future with construction of consolidated fill levee (Proposed Action) or a sand-based levee

Approximately 25 feet of material would be removed to provide material for levee construction. Such activity could disturb or destroy any deeply buried cultural resource.

Examination of soil boring profiles taken to determine the types of soil material within the proposed borrow area have not suggested that cultural resources may be deeply buried.

RECREATIONAL RESOURCES

This resource is institutionally significant because of the Federal Water Project Recreation Act of 1965, as amended, and the Land and Water Conservation Fund Act of 1965, as amended. Recreational resources are technically significant because of the high economic value of recreational activities and their contribution to local, state, and national economies. Recreational resources are publicly significant because of: the high value that the public places on fishing, hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Louisiana; and the large per-capita number of recreational boat registrations in Louisiana.

Levee and Adjacent Borrow Site

Existing Conditions

In Terrebonne Parish for 2003, the Louisiana Department of Wildlife and Fisheries reports that 14,272 recreational boats are registered and 24,151 fishing and 5,330 hunting licenses were issued. The natural and Recreational resources of the project area provide wide and varied opportunities for outdoor enjoyment. Recreational activities taking place in the southern Houma area, and adjacent marshes, include motorized and non-motorized boating, environmental study, hunting, fishing, and wildlife viewing, including nature photography. Recreational fishing is by far the most popular activity in the area due to the presence of numerous water bodies and access into adjacent bayous and marshes. Small game hunting is also popular due to the abundance of habitat and a wide range of species available to the hunter.

This coastal area provides an important winter habitat for migratory birds at the southern end of the Mississippi Flyway. During duck hunting season this area and the adjoining marshes provide numerous opportunities for a successful hunting trip.

Future Conditions with No-Action

The marshes in the vicinity of the project would continue to subside converting to open water. Losses of emergent vegetation in this eroded area would result in a less productive estuarine area. Less breeding grounds for fish and small game would result in a less success for hunting and sport-fishing in this area.

Future with construction of consolidated fill levee (Proposed Action)

Aproximately 23 acres of marsh would be impacted for new levee construction. Marsh loss in the project area would be mitigated by the development of an adjacent borrow area consisting of a 50-foot or 119-foot wide berm built on the floodside adjacent to the new levee and extends the entire length of the new levee. Upon levee completion, the berm would be planted with native vegetation and would be allowed to grow naturally without grass cutting or maintenance of this type. In time this new levee berm would create approximately 23 acres of emergent marsh habitat returning most of the potential losses to hunting and sport fishing in the area. Creation of a new flood side borrow canal would provide aquatic habitat for sport fishing and huntable species to breed and flourish. Water connection access for sport fisheries would be maintained by the existing culverts, water control structures and the breaching of the old board road in the northern end of the project. This board road being planned and would be developed as a birding trail by Louisiana Department of Wildlife and Fisheries.

Future with construction of a sand-based levee

With implementation of the narrower sand-based levee, less acres of marsh would be lost for levee construction. Less marsh lost would require less mitigation however there would still be development of an adjacent borrow berm area 50 feet wide built on the flood side of the levee for its entire length. This berm, as in the proposed action would be planted with native vegetation and allowed to grow naturally without grass cutting or maintenance of any type. All conditions realized in the proposed action dealing with additional emergent marsh habitat, sport fishing, potential hunting, culvert water flow, control structures, and the board road's future would remain the same in this project condition.

Off-site Borrow

Existing Conditions

The proposed approximate 100-acre field planned for obtaining off-site borrow material is mostly cleared open land. The field is bordered on the west by secondary growth hardwood trees along Bayou la Cache, on the eastern side by open pastureland and on the north and south by fencerow vegetation. Small previously used borrow pits filled with water are existing in the southern portion of the long rectangular field. No recreational fishing occurs in these borrow pits or in Bayou la Cache. The field and edges are used for hunting squirrels, rabbits and doves. The proposed borrow site was once used to grow sugar cane, now it is predominately a hay-producing field.

Future with No-Action

Recreational use in the proposed borrow site would continue in the future as established in the existing conditions.

Future with construction of consolidated fill levee (Proposed Action) or a sand-based levee

With development of the new levee, earth material would be removed from the proposed borrow site creating a shallow lake that would fill with water by rain only. There would be no hydrologic link to Bayou La Cache. Without a connection to the adjacent bayou for water ingress and egress sport fishing resources probably would not develop. The shallow lake could be used as a catfish pond with proper management of

the water resources. Recreational hunting of squirrels, rabbits and doves would be confined to the borrow pit's wooded edges. Duck hunting in the winter months could occur here, however with competing resources in the area it is unlikely that this activity would flourish.

AESTHETIC RESOURCES

This resource's institutional significance is derived from laws and policies that affect visual resources, most notably the 1969 National Environmental Policy Act, (NEPA). The 1988 U.S. Army Corps of Engineers Visual Resources Assessment Procedure (VRAP) provides a technical basis for identifying the project's significant impacts. Public significance is based on expressed public perceptions and professional analysis of the projects visual impacts.

Levee and Adjacent Borrow

Existing Conditions

Primary viewpoints into the areas emanate from various positions along the west bank of Bayou Point-aux Chenes along LA highway 665 to Parish Road 73. Scenic views in the area are a variety of low lying coastal marsh grasses and floating aquatic species, which produce flowers at times. LA Highway 665 is built on a slight ridge, providing elevation diversity. Viewpoints that may provide some visual interest are based on the interplay of forms and textures occurring when manmade elements are contrasted by water, vegetation, and changes in elevation from the water's edge.

Future Conditions with No-Action

Visual resources would evolve from Existing Conditions in a natural process.

Future Conditions with construction of consolidated fill levee (Proposed Action)

This project involves raising a levee along the west bank of Bayou Point-aux Chenes adjacent to LA Highway 665. As a result of this work, a borrow pit would be developed creating open views across a 202 foot water canal. Beyond the borrow pit continued views would be toward a dual-purpose marsh platform containing a variety of marsh grasses and plants. Within the borrow canal aquatic plants would naturally populate, producing flowers at the appropriate time of the year. The new levee would contain turf grass and would be maintained by grass cutting. Louisiana Department of Wildlife and fisheries are proposing the old board road as a birding trail. This trail would traverse the levee and marsh berm into an undisturbed pristine marsh environment providing for a scenic birding environment to be enjoyed by the public.

Future with construction of a sand-based levee

Aesthetic conditions realized with this narrower levee footprint would be relatively the same as those within the Proposed Action condition.

Off-Site Borrow

Existing Conditions

The 100-acre field planned for obtaining off-site borrow material is mostly cleared open land currently being used for harvesting hay. The field is bordered on the west by secondary growth hardwood trees along Bayou La Cache. Vegetation along the bayou's slightly raised spoil bank consists mostly of low quality volunteer deciduous trees, scrub and vines. The majority of trees are hackberry, tallow, willow, maple, and wax myrtle. Of the tree group only the maple and tallow tree offer beautiful fall color to be enjoyed by the visitor. On the eastern side of the field is open pastureland with wide clear panoramic views toward residential single story properties. On the northern and southern edges of the field is fencerow vegetation similar to types along Bayou La Cache. Small previously used borrow pits in the field's southern area are filled with water. These sand

bordered pits and mounded earth hills offer an interesting visual variation to the otherwise open flat field. Aesthetics in the area are typical of Southern Louisiana communities lining higher land adjacent to bayous with surrounding open agricultural fields.

Future with No Action

Without development of the borrow pit, the area would remain as it is in the existing condition setting.

Future with construction of consolidated fill levee (Proposed Action) or a sand-based levee

Earth material removed from the 100 acre off site open field would create a shallow lake changing the visual appearance of the area. Construction activities involving dirt-moving equipment would impose a heavy construction atmosphere in the area. Numerous trucks loaded with earth would use the residential roads in the area vicinity, delivering material to the J1 levee reach. These trucks would adversely impact the peaceful, serene, auditory environment currently enjoyed by residents in the surrounding area. The result the earth moving activity would be a large borrow hole in the ground that would hold rain water creating open pond with likely volunteer aquatic edge vegetation. Residents living to the east of the new lake would see a water surface that reflects the color of the sky surrounded on three sides with mostly deciduous tree vegetation. The fall color of maple and tallow trees would provide attractive variety to an otherwise gray panoramic skyline. Birds and other wildlife would begin using the open lake thus providing visual opportunities for wildlife observation and environmental study.

AIR QUALITY

This resource is considered institutionally significant because of the Louisiana Environmental Quality Act of 1983, as amended, and the Clean Air Act of 1963, as amended. Air Quality is technically significant because of the status of regional ambient air quality in relation to the National Ambient Air Quality Standards (NAAQS). It is publicly significant because of the desire for clean air expressed by virtually all citizens. Terrebonne and LaFourche Parishes are currently classified as in attainment of all NAAQS[9]. This classification is the result of area-wide air quality modeling studies. LaFourche Parish's status was redesignated to ozone attainment from non-attainment in February 2002. The total volatile organic compound emissions for this project during construction is anticipated to be well below the *de minimis* level of 100 tons per year. Therefore, this action conforms to the Louisiana State Implementation Plan.

Socioeconomic (HIGHWAY IMPACTS)

The transport sector is an important component of the economy impacting development and the welfare of populations. Transport also carries an important social and environmental load, which cannot be neglected. The economic impacts of transportation can be direct and indirect: Direct impacts related to accessibility change where transport enables larger markets and enables to save time and costs**.** Indirect impacts related to the economic multiplier effect where the price of commodities drop and/or their variety increases (Rodrigue, J-P et al. 2004). Since roads link the levee site and the off-site borrow area, the conditions due to the project will be considered together.

[9] http://www.deq.state.la.us/evaluation/ozone/statuso3.htm

Existing Conditions

Aragon Road and Louisiana State Highways 55 and 665 are two-lane paved roads linking residents, farms, and businesses of rural Terrebonne Parish with the larger business community of Houma as well as the rest of the state. The state highways currently have a weight restriction of 80,000 pounds, and the Bayou Terrebonne Bridge has a height limit of 13 feet 6 inches according to Louisiana Department of Transportation and Development (LADOTD).

Future Conditions with No-Action

The roads and bridges are expected to receive wear and tear at their current rate. Highway 665 would continue to be flooded by storm surges and tropical storms, blocking entrance and egress to those residents and businesses further to the south.

Future with construction of consolidated fill levee (Proposed Action) or a sand-based levee

With construction of the project and hauling fill material from the borrow site north of Montegut, Louisiana to the levee site, there is the potential that the roads or bridge would require early maintenance. This maintenance could include milling off the existing surface to eliminate potential rutting and surface irregularities, patching the road and base in failed areas, overlaying with asphalt, and then replacing the pavement striping (correspondence with LADOTD on March 4, 2005). The roads could also receive short term aesthetic impacts of haul material or deleterious material dropped or deposited on the established haul travel routes; however, the contractor would be required to immediately remove or clean these materials.

HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

The CEMVN is obligated under Engineer Regulation 1165-2-132 to assume responsibility for the reasonable identification and evaluation of all Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within the vicinity of the proposed action. A HTRW Land Use History and Phase I HTRW Initial Site Assessment (ISA #233) is in preparation for the proposed action and will be on file in the CEMVN upon completion. The aerial photography, land use, agency review, and site investigation studies did not reveal any sites of HTRW risk within the proposed levee work. The presence of pipelines in the work area poses no special risk, provided normal safety precautions would be taken to avoid impacting the pipelines. A field inspection (November 17, 2004) and subsequent studies did not find any evidence to suggest a possible HTRW risk at the 100-acre proposed borrow site. Preliminary results indicate a low risk of encountering HTRW within the proposed levee right-of-way and borrow area

CUMULATIVE IMPACTS

Cumulative impacts are the impacts on the environment that results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. These direct and indirect impacts were originally addressed in the 2002 Mississippi River and Tributaries, Morganza, Louisiana to the Gulf of Mexico Hurricane Protection Programmatic EIS and are incorporated by reference.

Louisiana contains 40 percent of the continental United States coastal wetlands

(Gosselink 1984) and wetlands are the prevalent characteristic in the study area. Coastal wetland losses in Louisiana have averaged 25 square miles per year (Boesch et al. 1994). There has been no appreciable deltaic development in the Terrebonne Basin for the past 500 years. Data for the Basin (over 1 million acres), which includes the study area, shows that land was lost from 1956-1978 at a rate of 0.79 percent per year. From 1978-1990, the land loss rate was 1.2 percent per year (Reed et al. 1995). These losses occurred from a variety of reasons, including subsidence, erosion, sea level change, oil and gas development, navigation channels, etc. Such land losses are predicted to continue with or without the proposed project.

In an effort to restore salinities and hydrology in the marsh adjacent to the proposed levee, DU in conjunction with the North American Wetlands Conservation Council, proposes to install four hydrologic structures and an exterior low marsh-management levee on the Point-aux-Chenes Wildlife Management Area. This new levee and other marsh-management levees on the wildlife refuge would be lower than the proposed hurricane protection levee, but would provide some protection from storm surges. Also on the Point-aux-Chenes Wildlife Management Area is the Montegut Wetland Project, which comprises 4,200 acres of marsh. The project system consists of dike system maintenance and water control structures to increase marsh vegetation and reduce salinities. To mitigate for the impacts to the marsh, the proposed levee includes a wave/marsh creation berm on the flood side of the levee. This berm would create approximately 23 acres of new marsh. With the DU project, the marshes on the flood side would have a chance to recover, and submerged aquatic vegetation is expected to regrow in existing shallow open water areas.

The new levee would close a gap in existing hurricane protection levees in the area, providing protection to residents of Terrebonne and Lafourche Parishes. The Reach J1 levee is a segment of the proposed 72-mile levee system called Morganza, Louisiana to the Gulf of Mexico (MtoG). The programmatic EIS (PEIS) for the MtoG serves in part as the cumulative impact analysis for this EA. The Record of Decision for the PEIS has not been signed as of yet, and Congress has not authorized nor funded construction. The J1 levee would not enclose any additional developable land, but would protect existing homes, businesses, and infrastructure. Enclosed marshes would remain regulated by regulatory state and federal agencies.

As more wetlands in southern Louisiana are lost, any buffers to storm surges are also lost and there is a greater need to protect inland communities, businesses, and infrastructure from devastating losses from hurricanes and tropical storms. The secondary objective of protecting wetlands would be compatible with the Louisiana Coastal Area (LCA) plan and the cumulative impacts of these two plans would be positive. The Reach J1 levee would not stop but could slow coastal erosion. When construction of the levee is completed, the cultural site, 16TR33, would be protected from further erosion by the presence of the levee. In addition, to the extent that soils are allowed to accumulate and fill in on the protected side of the levee, site 16TR33 would become more deeply buried and better protected from all other forces of erosion and possible destruction.

Additional materials to construct the levee would come from an agricultural field near the town of Montegut. This borrow site has been under pump and drain since the early 1950s. In the past it was farmed for sugar cane, but is currently farmed for hay and livestock grazing. Approximately 25 acres of this 100-acre site are considered “Prime and Unique Farmlands” and would be lost for future land-based farming efforts. Trucks hauling fill material would have temporary impacts to local roads, causing congestion, and possibly causing damage to the roads.

COORDINATION

Preparation of this EA and a draft Finding of No Significant Impact (FONSI) has been coordinated with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. The following agencies, as well as other interested parties, are receiving copies of this EA and draft FONSI:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Natural Resources Conservation Service, State Conservationist
Advisory Council on Historic Preservation
Governor's Executive Assistant for Coastal Activities
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality, PER-REGC
Louisiana Department of Environmental Quality, EP-SIP
Louisiana State Historic Preservation Officer

The following are recommendations of the U.S. Fish and Wildlife Service in accordance with the Fish and Wildlife Coordination Act Draft Report, dated March 3, 2005:

I. To avoid project-related impacts to enclosed wetlands and to completely offset anticipated project impacts the Service provides the following recommendations:

1. The Ducks Unlimited/North American Wetlands Conservation Act project P-2 plug shall be removed to preclude impoundment of the southern most enclosed marshes

2. To preclude project-induced impoundment of the northernmost enclosed marshes, six 24-inch-diameter culverts, with an invert elevation of –1.0 feet NAVD88, shall be installed through the abandoned board road to maintain drainage for the enclosed marsh northwest of that board road.

3. To preclude project-induced impoundment of enclosed marshes southeast of the abandoned board road, a 3-foot-wide levee-toe trenasse, with a bottom elevation of –2 feet NAVD88, shall be dredged through marsh peninsulas A through D (figure 3) to connect impounded marshes with the enclosed open water area adjacent to the southernmost culvert under Louisiana Highway 665. Additionally, a 10-foot-wide trenasse with a bottom elevation of –2.0 feet NAVD88, should be constructed across marsh peninsula E to provide water circulation, drainage, and fisheries access for the enclosed marshes.

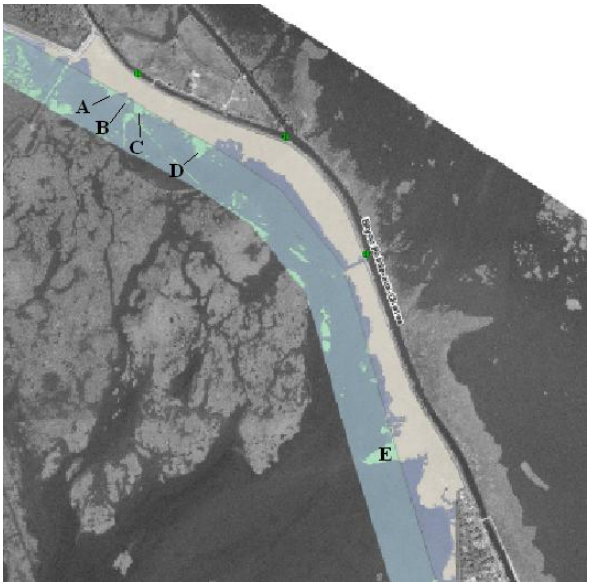

Figure 3. Location of proposed trenasses on protected side of the Reach J1 levee.

4. Marsh-creation activities shall be conducted in a manner that avoids adverse impacts to existing marsh within the marsh-creation area. Existing marshes impacted by project-related activities shall be restored to pre-construction conditions.

5. After construction, the marsh-creation platform shall be planted with plant species recommended by the HET.

6. At least two 24-inch-diameter culverts shall be installed under the temporary construction access road to maintain drainage of enclosed wetlands. That road shall be graded down to marsh level after construction is completed. Materials removed from the road shall be placed in open water to create additional marsh.

7. Levee construction and maintenance activities shall include plans and contract specifications to avoid adverse impacts to existing and created marshes. Existing and created marshes impacted by such activities shall be restored to pre-impact conditions.

II. To ensure that the proposed marsh creation berm provides sufficient compensation for project-related wetland impacts, the Service recommends that monitoring should be conducted to determine whether the following post-construction success criteria have been achieved:

1. Post-construction elevation surveys of the created marsh, existing marsh located within the marsh creation berm, trenasses, degraded temporary access road, and invert elevations of culverts under the northwesternmost board road, shall be conducted one year, three years, and five years after construction is completed.

2. One full year after construction of the marsh creation platform, that platform shall be within the functional marsh elevation range (to be determined by the HET, plus or minus 3 inches). However, ten percent of that platform may exceed the functional marsh range, provided it exceeds the designated functional marsh elevation range.

3. One full growing season after planting the marsh creation platform, planting survival shall be at least 50 percent.

4. Post-construction photographs of vegetation on the mitigation berm shall be taken at locations recorded by a Global Positioning System and re-photographed at year 3 and year 5.

MITIGATION

As mitigation for this project, part of the levee design includes the construction of a 50-foot and/or 119-foot wide marsh berm on the flood side. Through the Wetland Value Assessment process, an interagency team assessed the intrinsic value of the created marsh. As emergent marsh has greater habitat value than shallow open water, its numeric value is weighted in determining total benefits, as seen in table 6. The net change in marsh benefits due to the project would be 2.00 AAHUs. Additionally, mitigation for enclosing marsh on the protected side of the levee would consist of a trenasse being cut across existing marsh peninsulas connecting open water areas and six 24-inch culverts would be installed in the old board road.

Table 6. Net change in future benefits of proposed project as expressed in Average Annual Habitat Units

	Emergent Marsh Habitat Net AAHUs	**Open Water Habitat Net AAHUs**	**Net Benefits***
Protected side marsh	14.58	5.45	12.04
Levee and borrow canal	-3.60	-47.51	-15.80
Marsh creation berm	11.12	-8.18	5.76
Total			**2.00 AAHUs**
	* Net benefits = (2.6xEM AAHUs + OW AAHUs)/3.6.		

CEMVN is aware of the cultural site, 16TR323 that is within the Right-of-Way of the levee and on the edge of the levee footprint itself. A “no work zone” would be defined around the known edges of the site, and the Right-of-Way would be adjusted such that no disturbance is brought to the site. An archaeologist would be present at any pre-construction conference, to inform all project individuals of the necessary precautions in this area. An archaeologist would be present on site during construction in the vicinity of site 16TR33, and would act quickly to protect the site if remains are unexpectedly discovered.

Specifications indicated that the contractor(s), or sub-contractor(s) would be required to use Aragon Parish Road to LA State Hwy 58, to LA State Hwy 55 to LA State Hwy 665 to the project site when hauling levee material to the Reach J1 Levee. The return trip to the borrow site would be the reverse of this route. In the event of road closures alternative routes may be required. The contractor would be required to comply with Louisiana State Highway regulations and Terrebonne Parish Ordinances governing commercial haul use of the noted roadways. In support of and in addition to the state regulation and the parish ordinance, the haul contractor would be required to observe road load limits, whether posted or not, and all traffic signage. Current load limits cannot exceed 80,000 pounds, and the height restriction at the Terrebonne Bayou Bridge is 13 feet 6 inches (LADOTD). Departure from the borrow site would be by contractor designed limestone roadway to the highway entrance point. The roadway would be designed by the contractor to have limestone turn-outs and limestone wash points to ensure entry to the highway is safe and that trucks do not carry borrow site material or deleterious material to the highway/road. Departure points from the project site for return to the borrow site would be similarly equipped. The hours of operation for hauling material to the Reach J1 levee site would be Monday through Saturday between the hours of 7 am to 5 pm, excluding state and parish holidays. Haul material or other deleterious material dropped or deposited on the established haul travel routes would be immediately removed and cleaned. State and parish haul routes would be kept in operable condition at all times.

COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Environmental compliance for the proposed action would be achieved upon: coordination of this EA and draft FONSI with appropriate agencies, organizations, and individuals for their review and comments; U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) confirmation that the proposed action would not be likely to adversely affect any endangered or threatened species; Louisiana Department of Natural Resources concurrence with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program; receipt of a Water Quality Certificate from the State of Louisiana; public review of the Section 404(b)(1) Public Notice; signature of the Section 404(b)(1) Evaluation; receipt of the Louisiana State Historic Preservation Officer Determination of No Affect on cultural resources; receipt and acceptance or resolution of all USFWS Fish and Wildlife Coordination Act recommendations; receipt and acceptance or resolution of all Louisiana Department of Environmental Quality comments on the air quality impact analysis documented in the EA; and receipt and acceptance or resolution of all NMFS Essential Fish Habitat recommendations. The draft FONSI will not be signed until the proposed action achieves environmental compliance with applicable laws and regulations, as described previously.

CONCLUSION

The proposed action consists of the construction of approximately 2.7 miles of levee with materials from an adjacent borrow canal as well as an off-site borrow area in Terrebonne Parish, Louisiana. Project features also include the construction of a floodside marsh platform, improvements of an existing road for construction and future access, and construction of a temporary road that would be degraded when the project is completed. This office has assessed the environmental impacts of the proposed action and has determined that the proposed action would have no significant impacts on wetlands, uplands, fisheries, wildlife, essential fish habitat, endangered or threatened species, cultural resources, recreation, aesthetics, and air quality. The risk of encountering HTRW on this project is low. Impacts to wetlands would be mitigated with the construction and planting of an approximately 23-acre floodside marsh berm.

PREPARED BY

EA #406 and the associated draft FONSI were prepared by Elizabeth L. McCasland, biologist, and with cooperation of Terrebonne Levee Conservation District and T. Baker Smith and Son, Inc. Relevant sections were prepared by: J. Christopher Brown - HTRW; Paul Hughbanks - Cultural Resources; Stephen Finnegan - Recreational Resources; and Wilson “Bill” Maloz - Project Manager. The address of the preparers is: U.S. Army Corps of Engineers, New Orleans District; Planning, Programs, and Project Management Division, CEMVN-PM; P.O. Box 60267; New Orleans, Louisiana 70160-0267.

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APPENDIXES

Appendix A – files from TBSmith
- Right-of-way on 2003 aerial photo
- Full length drawing of levee (Sheet 1)
- Line drawing, south end of levee (Sheet 2)
- Line drawing, middle section (Sheet 3)
- Line drawing, north end of levee (Sheet 4)
- Typical cross section (Sheet 5)
- Borrow site map ("Robert Neil" Site, Sheet 11A)

Appendix B – Wetlands Value Assessment
- Team members were from the following agencies:
  - Louisiana Department of Natural Resources
  - Louisiana Department of Transportation and Development
  - Louisiana Department of Wildlife and Fisheries
  - NOAA – National Marine Fisheries Service
  - T. Baker Smith and Son, Inc.
  - Terrebonne Levee Conservation District
  - US Army Corps of Engineers
  - US Fish and Wildlife Service

Appendix C – Farmland Conversion Impact Rating

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF:

Planning, Programs, and
Project Management Division
Environmental Planning
and Compliance Branch

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

MISSISSIPPI RIVER and TRIBUTARIES
MORGANZA, LOUISIANA TO THE GULF OF MEXICO
HURRICANE PROTECTION REACH J, SEGMENT 1
TERREBONNE PARISH, LOUISIANA

EA #406

Description of Proposed Action. The U.S. Army Corps of Engineers, Mississippi Valley Division, New Orleans District (CEMVN), proposes to construct a levee to close a gap between existing levees. The proposed project, Reach J Segment 1 (Reach J1 levee), is part of the overall Morganza to the Gulf hurricane protection system. The Reach J1 Levee project is located on the west bank of Bayou Point-aux-Chenes along LA Highway 665 to Parish Road 73, approximately 16 miles south of Houma, Louisiana. The Reach J1 levee is described as a 2.7 mile reach consisting of a segmented flood side borrow canal, a dual purpose marsh platform and levee berm, a consolidated fill levee, a T-wall at the pipeline crossing, a protected side berm, a protected side fishery access trenasse, a temporary construction access road, and improvements including culverts to the old board road to make it a permanent access road.

The levee would be constructed in two or three lifts, with the final height built to a design grade of +13 feet North American Vertical Datum 1988 (NAVD 88). Approximately 1.5 million cubic yards of fill would be used in the first lift, and 350,000 cubic yards in the second lift. The fill would come from two sites, one adjacent to the levee, and the other near Montegut, LA. The adjacent borrow canal for fill material consists of a segmented channel at a depth of 26.5 feet, with a 58-foot bottom width, a 202-foot top width, and 1-foot vertical (V) on 3-foot horizontal (H) side slopes. Each segment of the borrow canal would be approximately 1,550 feet in length, separated by a 200-foot long segment of marsh. The dual-purpose marsh platform would be approximately 50 feet or 119 feet wide (extending up to 121-240 feet from center line of the levee) and constructed to an initial elevation of approximately 2 feet, which would be conducive to the development of long-term wetlands. Where there is no adjacent borrow canal, the marsh platform would be 50 feet wide, and adjacent to the borrow area, the platform would be 119 feet wide. The platform would provide new marsh habitat as mitigation for this project and would provide wave protection to the levee.

The levee itself would be built on geotextile fabric with compacted soils coming from adjacent local borrow and trucked in from an off-site borrow field. The wave berm on the flood side would have 1-foot V on 12-foot H side slopes. The levee would have 1-foot V on 4-foot H

side slopes and would be built to a height of 14 feet with a 10-foot wide crown. On the protected (land) side of the levee, the slope would be 1-foot V on 4-foot H to the +6 foot elevation. From that point it would have a 1-foot V on 16-foot H side slope to the +2 foot elevation, then taper to natural ground. Each end of the new levee would connect with existing levees.

A pile supported concrete T-wall would be constructed where a 20-inch high-pressure gas pipeline crosses the proposed levee alignment. The wall would be built to a height of +14 feet, would be approximately 120 feet long, and would tie into the levee at each end.

To ensure water drainage and to allow continued fisheries access on the protected (land) side of the levee, trenasses would be cut across existing solid marsh peninsulas where they intersect with the levee. The trenasses would be dug to a depth of 2 feet and would be 3-10 feet wide. Six 24-inch culverts would be installed in the old board road to assure continuation of drainage and water circulation. After construction, but no longer than one year, the temporary construction access road would be degraded to marsh height and a 10-foot wide by 2-foot deep trenasse would be cut where the road joins the new levee.

Additional materials for levee construction would be excavated from a 100-acre site located off Aragon Road and adjacent to Bayou la Cache, near Montegut, Louisiana. Materials would be trucked to the levee site in standard 14-20 cubic yard dump trucks or 24-30 cubic yard trailer bed trucks. The first lift is estimated to take 12 months, and the second lift is estimated to take 9 months, with approximately 4 years between lifts. Approximately one million cubic yards of fill would be taken from this site in the first lift, and approximately 350,000 cubic yards in the second lift.

Factors Considered in Determination. This office has assessed the impacts of the proposed action on significant resources, including wetlands, upland/farmlands, fisheries, wildlife, essential fish habitat, endangered or threatened species, recreation, aesthetics, and cultural resources. As compensatory mitigation for this project, part of the levee design includes the construction of a 50-foot and/or 119-foot wide marsh berm on the flood side. Additionally, mitigation for enclosing marsh on the protected side of the levee, will require that a trenasse be cut across existing marsh peninsulas connecting open water areas and six 24-inch culverts will be installed in the old board road. The net change in wetland benefits due to the project would be 2.0 AAHUs. No significant adverse impacts were identified for any other significant resources. The risk of encountering HTRW is low.

By letters dated December 28, 2004 and April 20, 2005, respectively, the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) confirmed that the proposed action would not be likely to adversely affect any endangered or threatened species. In a letter dated July 14, 2005, the Louisiana Department of Natural Resources concurred with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program (CZ #C200140). A Water Quality Certificate (WQ #TR 031021-01 / AI 90947 / CER 20030006), dated May 16, 2005, was received from the Louisiana Department of Environmental Quality. Review of the Section 404(b)(1) Public Notice was completed on May 15, 2005. The Section 404(b)(1) Evaluation was signed on March 3, 2005. In a letter dated May 18, 2005, the Louisiana State Historic Preservation Officer (SHPO) concurred with a recommendation of no effect on historic properties. This office has concurred with, or resolved, all Fish and Wildlife Coordination Act recommendations contained in a letter from the U.S. Fish and Wildlife Service, dated July 13, 2005. This office has concurred with, or resolved, all Essential Fish Habitat recommendations contained in a letter from the National Marine Fisheries Service, dated July 14, 2005. This office has concurred with, or resolved all Prime and Unique Farmlands recommendations contained in a letter from the U.S. National Resource Conservation Service dated May 9, 2005. This office has concurred with, or

resolved, all comments on the air quality impact analysis documented in the EA, which were contained in a letter from Louisiana Department of Environmental Quality, dated April 29, 2005, (AQ #DEQ0504200192).

Environmental Design Commitments. The following commitments are an integral part of the proposed action:

1. If the proposed action is changed significantly or is not implemented within one year, CEMVN will initiate subsequent coordination with the USFWS to ensure that the proposed action will not adversely affect any Federally listed threatened or endangered species, or their habitat.

2. A "no work zone" will be defined around the known edges of the cultural site 16TR33, and the right-of-way will be adjusted such that no disturbance is brought to the site. An archaeologist will be present at any pre-construction conference, to inform all project individuals of the necessary precautions in this area. An archaeologist will be present on site during construction in the vicinity of site 16TR33, and will act quickly to protect the site if cultural resources are unexpectedly discovered. If any unrecorded cultural resources are determined to exist within the proposed project boundaries, then no work will proceed in the area containing these cultural resources until a CEMVN-PM-RN archeologist has been notified and final coordination with the SHPO and THPO has been completed. [CEMVN-PM-RN/SHPO Standard Operating Procedure]

3. Specifications will be written such that the contractor(s), or sub-contractor(s) will be required to use Aragon Parish Road to LA State Hwy 58 La State Hwy 55 to LA State Hwy 665 to the project site when hauling levee material to levee Reach J1. The return trip to the borrow site will be the reverse of this route. In the event of road closures, alternative routes may be required. The contractor will be required to comply with Louisiana State Highway regulations and Terrebonne Parish Ordinances governing commercial haul use of the noted roadways. In support of and in addition to the state regulation and the parish ordinance, the haul contractor will be required to observe road load limits, whether posted or not, and all traffic signage. Current load limits cannot exceed 80,000 pounds, and the height restriction at the Terrebonne Bayou Bridge is 13 feet 6 inches (Louisiana Department of Transportation). Departure from the borrow site will be by a contractor designed limestone roadway to the highway entrance point. The roadway will be designed by contractor to have limestone turn-outs and limestone wash points to ensure entry to the highway is safe and that trucks do not carry borrow site material or deleterious material to the highway/road. Departure points from the project site for return to the borrow site will be similarly equipped. The hours of operation for hauling material to the Reach J1 levee site will be Monday through Saturday between the hours of 7 am to 5 pm, excluding state and parish holidays. Haul material or other deleterious material dropped or deposited on the established haul travel routes will be immediately removed and cleaned. State and parish haul routes will be kept in operable condition at all times.

4. The Ducks Unlimited/North American Wetlands Conservation Act project P-2 plug shall be removed to coincide with completion of the levee to preclude impoundment of the southernmost enclosed marshes.

5. Marsh-creation activities shall be conducted in a manner that avoids adverse impacts to existing marsh within the marsh-creation area. Existing marshes impacted by project-related activities shall be restored to pre-construction conditions.

6. After construction, the marsh-creation platform shall be planted with plant species recommended by the Habitat Evaluation Team (HET), a multi-agency team formed for the Morganza to the Gulf project.

7. Monitoring will include the following:
Post construction elevation surveys of the created marsh berm, existing marsh located within the marsh creation berm, trenasses, degraded temporary access road, and invert elevations of the culverts placed in the northwestern most board road, shall be completed at the following schedule:
   a. Year 0 – post construction surveys ("as builts") for construction management
   b. Year 1 – after one growing season – elevational surveys and vegetative cover, with a report to the HET.
   c. Prior to second lift – estimates between years 3 and 5 – elevational surveys and vegetative cover, with a report to the HET. If Terrebonne Levee Conservation District (TLCD), the local sponsor, estimates that the second lift will not occur before year five, the TLCD will do monitoring at year three. TLCD will make the decision for a second lift in year three.
   d. For subsequent lifts, the cycle is repeated.
   e. Final survey, five years post construction, with a report to the HET.
   f. Post-construction photographs of vegetation on the marsh berm and the enclosed/protected side marsh will be taken at locations recorded by Global Positioning System (GPS) and re-photographed at year three and five. Use of GPS equipment ensures the same sites are recorded in subsequent years. Photographs should be taken during the growing season (April through September during the same months and conditions, i.e. tides).

8. Three years after construction of the marsh platform, 96 percent of the platform footprint should remain as functional marsh (as anticipated in the Wetland Value Assessment). No more than ten percent of the platform may exceed the functional marsh elevation range. Five years after construction, at least 71 percent (WVA) of the marsh creation platform should remain as functional marsh. If fewer acres are found, the deficiency will be corrected during subsequent lifts. Functional marsh will be measured by acres of marsh, marsh plant survival, and will have a target elevation compared to healthy marsh in the vicinity (e.g. +1.4 feet NAVD88) with a tolerance factor of no more or less than 6 inches above/below the target elevation.

9. One full growing season after planting the marsh creation platform, planting survival should be at least 50 percent per acre. If vegetative plantings survival is less than 50 percent per acre as determined by sampling or observing high mortality, the Sponsor shall take appropriate actions, as recommended by the HET to address the causes of mortality and shall replace all dead plantings during the following growing season. In addition, ground truthing will be required to verify the photographs.

10. Information gathered for monitoring shall be reported to the HET in years two, four, and six after construction of the marsh berm or levee (first lift) is completed. The HET shall determine recommendations if corrective action or additional compensatory mitigation is required based on information contained in the reports, site inspections, and other available information.

11. Any damages to the marsh berm from additional lifts of the levee shall be repaired and replanted if necessary. The HET shall be coordinated with to evaluate compliance, determine need, and designate the type of corrective action.

Public Involvement. The proposed action has been coordinated with appropriate Federal, state, and local agencies and businesses, organizations, and individuals through distribution of Environmental Assessment # 406 (EA #406) for their review and comment. EA #406 is attached hereto and made a part of this FONSI.

Conclusion. This office has assessed the potential environmental impacts of the proposed action. Based on this assessment, a review of the comments made on EA #406, and the implementation of the environmental design commitments listed above, a determination has been made that the proposed action would have no significant impact on the human environment. Therefore, a Supplemental Environmental Impact Statement will not be prepared.

29 Jul 05
Date

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District Engineer